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Dear Sir:

Emphasizing the very large role played by electronics in the United States' atomic energy program, the professional group on nuclear science of the Institute of Radio Engineers met yesterday, and is meeting today, at Brookhaven National Laboratory, Upton, L.I. Yesterday a panel discussion of "The Role of Electronics Engineering in the USAEC Program" was led by Lloyd V. Berkner, president, Associated Universities, the Brookhaven contract operator, with Dr. Clark Goodman, MIT, and Dr. Keith Glennan, USAEC Commissioner, participating. Other Brookhaven speakers included Dr. Leland Haworth, director of the laboratory, who described Brookhaven's research facilities; Dr. J. P. Blewett, of the Cosmotron project who discussed research in electronics; and Dr. Donald J. Hughes, who described nuclear research. Today's meeting (Dec. 4th) will hear speakers from Stanford University, MIT, North Carolina State College, and Monsanto Chemical Company.

The Patent Compensation Board of the USAEC has now awarded $7,500 to Cyril E. McClellan, Glen Burnie, Maryland, in its first monetary grant allowed in the six applications it has considered since the Board was established in April, 1949. No award was allowed in the other five cases. Mr. McClellan's application was based on his design of an apparatus and method useful in separating isotopes of different mass by application of the principle that the time of flight of ions of the same charge varies with the mass of the respective ions. The Board stated that "While a method employing the same principles has been experimentally tried as a separation process and abandoned by the USAEC, and a similar method and apparatus, improved by the USAEC is being used in research measurements, no precise evaluation of the potentialities of the applicant's method and apparatus or measure of its importance is possible". The award was made in accordance with provisions of the Atomic Energy Act of 1946 which requires that discoveries useful in production of fissionable material be reported to the USAEC, but which also provides for the granting of awards to discoverers who are not eligible for other compensation.

With the two final nuclear detonations at the testing ground near Las Vegas signalling, last week, the end of the Fall test program, the USAEC has now stated that the total of seven detonations (five previously, plus these two more recent detonations) had "resulted in increased atomic weapons knowledge". These were the first atomic weapons maneuvers in the United States; one of the main objectives had been to determine how nuclear explosions would effect typical field emplacements and dispositions of Army personnel and material.

The first successful antidote for beryllium poisoning, the compound known as ATA, was reported to the American Chemical Society last week in Chicago by Dr. Jack Schubert, of Argonne National Laboratory. The metal beryllium, formerly used in fluorescent lamps, and now under investigation as a possible construction material for nuclear reactors, has only recently been recognized as the cause of an insidious, slowly developing disease, Dr. Schubert told the Society's Chicago Section.

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NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

Newly designed mount and shield for side window glass Geiger tubes; model 3030A. This new shield is arranged for mounting of a glass Geiger tube horizontally, and for placing a sample close to this tube surrounded by 2½" of iron, for background shielding purposes. The shield will accept many sizes of sample holders and incorporates a means of counting in three accurately predetermined geometries. Absorbers may also be used when desired.--Nuclear Instrument & Chemical Corp., Chicago, Ill.

Double pulse generator; model 903. Designed for general laboratory work, produces either single or double pulses such that the amplitude and width of each pulse is continuously and individually variable. Spacing between pulses is controlled by means of a calibrated front panel knob. The instrument is recommended by the manufacturer for such uses as designing and testing amplifier circuits; gating and gating control circuits; high speed scalers; and wide band amplifiers.--Berkeley Scientific Co., Richmond, Calif.

To enable radiologists to determine simply and with some degree of accuracy the amount of radiation that specific body areas have received, a film badge survey packet is now being offered. The packet consists of ten standard film badges (of this manufacturer) together with instructions on how to obtain accurate dosages at eight critical body locations; two of the badges are controls. After the badges have been worn during two hours of tube activation, or fifty fluoroscopic examinations, they are returned to this firm where they are developed and evaluated. (It is pointed out that once the amount of radiation being received is known, it is possible to obtain adequate protection for all sections of the body with spun glass fabric aprons, lead rubber aprons, or by other special means.)--Tracerlab, Inc., Boston 10, Mass.

Designed for discharging static electricity, the new "Static-Master Wand" utilizes the alpha emitting properties of polonium foil.--Nuclear Products Co., Costa Mesa, Calif.

RAW MATERIALS...radioactive minerals for nuclear work...

UNITED STATES- Moab, Utah: In the first loan to be granted by the Defense Minerals Administration in the Colorado Plateau for uranium exploration, the Bowes-Heflin Mining Co. has received funds to drill 25,500 feet of test holes on the company's property which consists of some 150 claims owned or leased in the Cane Springs area southeast of Moab...Boulder, Montana: Following nearly two years of exploratory and development work, the operators of the Haynes property near here shipped a 46-ton carload of ore which contained 1,068 pounds of uranium oxide. The ore was sent to the newly-established processing plant of Vitro Chemical Co., at Salt Lake City.

SOUTH AFRICA- Representatives of the United States, United Kingdom, and the Union of South Africa, in recent discussions here, have considered the production of uranium from gold-bearing ores. The talks were a continuation of those held earlier in the Union.

GREAT BRITAIN- Higher prices are now being offered by the Government's Ministry of Supply for uranium ores and concentrates--in some cases 100 per cent higher--to prospectors in the British colonies and dependent territories. The offer does not apply in the United Kingdom. Reasons for the higher prices are the general increase in prices of metals since the Ministry's original offer in March, 1949, and the increased prices now being offered by the United States and Canada. The new minimum prices for contained uranium oxide (delivered c.i.f. to a plant or United Kingdom port) range from 25s. a pound for ore containing not less than 20% uranium oxide, to 35s. a pound for ore containing not less than 10% uranium oxide. The original minimum offer was 15s. 9d. a pound of uranium oxide delivered f.o.b. ocean port. As an additional incentive, a development bonus equal to the purchase price will be paid for the first five tons of uranium oxide from previously unworked deposits, and capital may be provided for processing plants. The offer is restricted to pitchblende ores and their secondary derivatives, no guarantee of purchase being made for refractory uranium ores that cannot be treated by simple acid leaching plants.

INDUSTRY AND THE ATOM: A special digest of remarks by T. Keith Glennan, Commissioner, USAEC, before The American Soc. of Mech. Eng., Atlantic City, N.J., Nov. 29, 1951.

The basic operating principle of the USAEC is to accomplish its production goals through American industry. I would like to discuss with you some aspects of the present and future role of industry and business in the atomic enterprise.

Let's first look at the tangible assets accruing to an industry which participates in the atomic enterprise. There is, primarily, the improvement in technical resources and staff which comes about with participation. USAEC contractors have a decided advantage here. Then, there is the idea of "getting in on the ground floor". No industrialist knows just what the atom will mean to him. But he doesn't want to be left behind when the parade starts.

I think it fair to say that the USAEC has taken a number of steps to make things as attractive as possible to private enterprise. While over-all government ownership and control is a matter of law, the USAEC has limited the role of the government largely to policy, security, standards of performance, and contract administration. Some segments of the atom business have been left almost entirely in private hands. Uranium mining is the most conspicuous example. While we continue to rely on foreign sources for a major share of ore, a remarkable increase in production in the U.S. has been achieved through the encouragement of private enterprise.

In the isotope field, the USAEC is encouraging private enterprise in a number of areas. The manufacture of special isotope handling and processing equipment is a fast growing industry, and is almost completely in private hands. There are now some dozens of companies in this new field.

Another USAEC policy has been to turn over for commercial development some of the processes proved out in the laboratory. Many contractors have taken devices and systems developed successfully in USAEC laboratories and improved them in industrial operation. Presently, we are attempting to interest private companies in the production of zirconium metal and are willing to guarantee a market for a period of years as an incentive.

Now let's take a look at the future and some of the problems of opening the door for private investment, risk-taking, and profit-making in atomic energy.

This can best be done by recounting briefly the steps which have been taken during the past year by alert and progressive companies willing to risk an investment in the future. First, Abbott Laboratories, of North Chicago, have leased space in the "atomic city" of Oak Ridge and have a small manufacturing operation underway there for the preparation of certain radioactove compounds of short half-life. These will be sold to hospitals and medical research laboratories. Although small in scope, it is a significant step. Along the same line, Bendix Aviation, Detroit, and Tracerlab, Boston, are studying, at their own expense, the commercial feasibility of manufacturing, processing and selling radioisotopes. Then, there is atomic power. Dr. Charles Thomas, of Monsanto Chemical was the first to propose that if his firm put some people on the subject, they might find a better way of building reactors that would make plutonium cheaper than the USAEC can make it and make power at commercially competitive rates as a by-product of the plutonium manufacture. Others became interested, and as a result the USAEC has contracted with four groups that will invest at least $1 million in the very preliminary study phase:: Monsanto, and its associate, Union Electric, both of St. Louis; Detroit Edison and Dow Chemical of Midland, Mich.; Commonwealth Edison and the Public Service Company of Northern Illinois, both of Chicago; and the Bechtel Corporation and the Pacific Gas and Electric Company, both of San Francisco. With the exception of Monsanto and Dow, the others are newcomers to the atomic business. (Bechtel is now busy with its first USAEC job--constructing the chemical processing plants at the National Testing Station, Arco, Idaho.)

What I would like to see is more industries knocking on our door and asking "what's in this for me". As more companies get a dollar stake in the atom business, we will have a more critical examination of the assets and liabilities of the business. This is essential if we are to get answers to the questions of how the military and general civilian applications of atomic energy shall be operated and industrially developed: by Government, by industry, or by a combination of both?

RADIOISOTOPES & IONIZING RADIATION...news and notes...

United States- To assist health department personnel and key people in other governmental or private organizations to achieve broader understanding of radiation hazards and problems, short training courses in radiological health are being offered to qualified applicants by the Public Health Service at its Environmental Health Center in Cincinnati, Ohio. The program is for professional people who are primarily concerned with radiological health problems in their respective fields. Candidates should have a degree in medicine, engineering, physical science, or biological science, and have had experience in work relating to public health. Additional information may be obtained from the Center at 1014 Broadway, Cincinnati, Ohio.

Canada-The procedure for the international distribution of radioactive isotopes from this country's Chalk River atomic energy plant for research and industrial purposes has now been revised. The revision is the result of two year's experience in the international distribution of isotopes, and also in view of the arrangements made for distribution to be handled by Eldorado Mining and Refining, Ltd., as agent of the Atomic Energy Project, National Research Council. Under the revised procedure it will not be necessary for the Government of the applicant's country to appoint a representative in Canada to handle details of shipment and payment--these details in the future will be arranged directly between the applicants and the distributor. While it will still be necessary for a department or agency designated by the Government of an applicant's country to certify the application as to the desirability of the proposed use of the isotopes, and the qualifications of the user, the applicant will no longer be required to undertake that his establishment will be open to inspection by scientists regardless of nationality. Further particulars, copies of the isotope catalogue (listing the 98 now available) and details as to specific requirements, may be obtained from Eldorado Mining & Refining, Ltd., P.O. Box 379, Ottawa, Ontario, Canada, or from the Isotopes Branch, Atomic Energy Project, National Research Council, Chalk River, Ontario, Canada.

Great Britain -Reviewing the progress of nuclear physics in his address to the Royal Institution, this Nov. 2 last, Sir John Cockcroft, head of the Atomic Energy Research Establishment, Harwell, said that a "very exciting new phase" was now beginning in which an attempt was being made to discover the nature of the forces between the so-called elementary particles constituting matter. Two new isotopes of gold, Sir John disclosed, had been discovered by Dr. Butement and Mr. Shilloto, who had been using high energy neutrons from the 180 Mev cyclotron at Harwell.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

United States Civil Defense; the Clergy in Civil Defense. An administrative guide to indicate to the clergy of all faiths their place and function in nationwide planning for civil defense. The general pattern for the operational services of the clergy outlined in this manual is a standard model for civil defense planning at State and local levels.--Superintendent of Documents, Washington 25, D. C. (10¢)

Finding Out About Atomic Energy, by Dr. J. L. Michiels. A popular account. --C. A. Watts & Co., Ltd., London, E. C. 4. (England) (1s. 2d.)

Notes: "Practical Procedures of Measurement", the third motion picture in the series of about 14 entitled "The Radioisotope", and being produced for the Armed Forces Institute of Pathology, by the Army Signal Corps, has now been completed. These films, being made with the technical assistance of the USAEC and its contractors, include "Fundamentals of Radioactivity" (first in the series) and "Methodology" (second in the series). Intended for a professional audience which includes users and potential users of radioisotopes in medicine, agriculture, industry, and the basic sciences, the films are expected to be a useful training aid.

Price List No. 19, of the USAEC's research reports has now been issued. It is a revised and cumulated listing of all reports still in print, and supersedes all previous lists; copies may be obtained, at no charge from Office of Technical Services, Department of Commerce, Washington 25, D. C.

Included in the 1952 catalogue of measuring equipment recently issued by the General Electric Co., Schenectady, are many of that firm's nuclear detection and measuring instruments: beta ray thickness gauge, etc.

ATOMIC PATENT DIGEST...latest U. S. applications & grants...

Ionization chamber. A pocket chamber comprising a barrel having a carbon impregnated liner in it, a bottom closure and an open top, an electrode supported in this barrel and insulated from it, a removable cap which can slide into the open top, and means to seal the cap to the top. U. S. Pat. No. 2,573,999 issued Nov. 6, 1951; assigned to Victoreen Instrument Co., Cleveland, Ohio.

Ionization and vacuum tube chamber. An apparatus comprising a housing having a conductive coating on its interior, a center cylinder having a conductive coating on its exterior, a flange for this center cylinder engaged with this housing for holding the center cylinder in position, an inner cylinder in this cylinder and associated electronic components. U.S. Pat. No. 2,574,000 issued Nov. 6, 1951; assigned to Victoreen Instrument Co., Cleveland, Ohio.

Manufacture of uranium tetrachloride. This process comprises passing trichloroacetylchloride vapors over an oxide of uranium maintained at a temperature within the range of 135 deg. C. to 225 deg. C., and recovering the uranium tetrachloride. U. S. Pat. No. 2,574,268 issued Nov. 6, 1951; assigned to United States of America (USAEC).

Preparation of fluorocarbons. Comprises contacting the vapor of a hydrocarbon having more than two carbon atoms and excess gaseous fluorine in the presence of a catalyst, maintaining the reactants at from 100 deg. C., to 400 deg. C., and collecting a saturated fluorocarbon. U. S. Pat. No. 2,574,619 issued Nov. 13, 1951; assigned to United States of America (USAEC).

Uranium-cobalt alloy. A composition of matter consisting of an intermetallic compound. U.S. Pat. No. 2,574,626 issued Nov. 13, 1951; assigned to United States of America (USAEC).

Uranium-cobalt alloy. A composition of matter consisting of an intermetallic compound of uranium and cobalt having a density of about 17.7 grams per cubic centimeter. U. S. Pat. No. 2,574,627 issued Nov. 13, 1951; assigned to United States of America (USAEC).

Radiation detection and measuring apparatus and method. Comprises a radiation impermeable member having a surface adapted to support a sample of radioactive material, means operable to provide a uni-directional magnetic field across the sample mounting surface of the member, and means to detect beta particles. U.S. Pat. No. 2,574,632 issued Nov. 13, 1951; assigned to United States of America (USAEC).

Alkyl ether of chlorofluoroheptene, containing at least 8 fluorine atoms in the heptene radical. U. S. Pat. No. 2,574,649 issued Nov. 13, 1951; assigned to United States of America (USAEC).

Apparatus for focusing high-energy particles. A magnetic arc lens adapted to be disposed in the path of, and parallel to, a beam of high-energy particles, whereby the magnetic field of this arc exerts a focusing force upon particles of the beam. U. S. Pat. No. 2,574,655 issued Nov. 13, 1951; assigned to United States of America (USAEC).

Material and method for radiography. A radiographic device which comprises a gamma ray sensitized film, a substance capable of emitting gamma rays under neutron bombardment, and a column of slow including thermal neutrons incident upon this substance, these elements being so disposed that an object to be radiographed may be placed a substantial distance from the substance between the gamma emitting material and the sensitized film, with the sensitized film out of the path of the column of neutrons. U. S. Pat. No. 2,574,681 issued Nov. 13, 1951; assigned to United States of America (USAEC).

Method and apparatus for purifying and packaging uranium hexachloride. Comprises heating uranium hexachloride, condensing the vapor, and thus obtaining the hexachloride as a sublimate; subsequently, the solid deposit is removed and placed into a container which is hermetically sealed, all while maintaining the uranium hexachloride under vacuum. U.S. Pat. No. 2,574,842 issued Nov. 13, 1951; assigned to United States of America (USAEC).

Sincerely,

The Staff,
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